EPIDEMIOLOGICAL CHARACTERISTICS AND AGE-RELATED CLINICAL ASPECTS OF EPILEPSIA IN CHILDREN

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Annotation: *Epilepsy is one of the most pressing and complex problems of pediatric neurology, and the main part of the disease is formed precisely in childhood. In this literature review, an in-depth analysis of global and regional epidemiological indicators of epilepsy, the frequency of occurrence in the child population, the age-related dynamics of morbidity, and the clinical features of epileptic seizures was conducted. Analysis of studies shows that the prevalence of epilepsy is uneven with age, and the first year of life and adolescence are the periods of greatest risk. In children, epileptic seizures are clinically polymorphic, often atypical, and electroencephalographic signs do not always correspond to the clinical picture. These circumstances necessitate an individual approach to the early diagnosis and treatment of epilepsy.*

Keywords: *epilepsy, childhood epilepsy, epidemiology, age-related characteristics, epileptic seizures, childhood neurology.*

Epilepsy is a chronic disease of the central nervous system characterised by recurrent epileptic seizures and negatively affects the quality of life of millions of people worldwide. According to the World Health Organization, epilepsy is one of the most common neurological diseases on a global scale [12,18]. This pathology is considered not only a medical, but also a social and psychological problem, since patients with epilepsy often face difficulties in social adaptation, education, and professional activity [4,9,16].

In childhood, epilepsy has special clinical significance. During this period, the central nervous system is in a stage of intensive development, and the formation and reorganization of neural networks continues. Therefore, epileptic processes have a profound impact not only on the physical, but also on the intellectual and emotional development of the child. It is these aspects that require the study of childhood epilepsy as an independent scientific and clinical direction [1,8,20].

General epidemiological indicators of epilepsy

According to literature sources, the prevalence rates of epilepsy differ significantly in different countries and regions. On average, epilepsy occurs in 2-8 cases per 1000 population [7,11,19,21]. However, these indicators are directly related to the methods of epidemiological research, and with active screening and door-to-door examinations, the actual prevalence of epilepsy is significantly higher. On the contrary, statistical data compiled only on the basis of patients who applied to medical institutions cannot fully reflect the true scale of the disease.

Large population studies, such as the Rochester Epidemiological Project, show that the annual incidence of epilepsy is around 50-55 cases per 100,000 population. These figures once again confirm that epilepsy is a widespread and socially significant pathology [2,3,5].

Prevalence of epilepsy in the child population

The epidemiological characteristics of epilepsy in children differ significantly from those in adults. According to the literature, in 70-75 percent of patients with epilepsy, the onset of the disease corresponds to childhood or adolescence. The overall prevalence of epilepsy among children is estimated at around 0.5-1% [6,10,13].

The highest morbidity rates are observed in the first year of life. The annual incidence of epilepsy during this period is 100-120 cases per 100,000 children. In subsequent years, this indicator gradually decreases and by the age of 10 falls to 45-55 cases. In adolescence, the annual incidence of epilepsy is around 20-30 cases.

Such age-related dynamics can be explained by the maturation of the central nervous system, the regression of some age-specific epileptic syndromes, and the stabilization of neurophysiological mechanisms [15].

Age-related clinical features of epilepsy

In childhood, epileptic seizures are clinically characterized by a high degree of polymorphism. Especially in infancy and early childhood, seizures often manifest as atypical, abortive, or incompletely formed. This condition creates difficulties in diagnosis and complicates the differentiation of epilepsy from other paroxysmal conditions [5,8,14].

Electroencephalographic examinations in children do not always fully correspond to the clinical picture. In some cases, although pronounced clinical seizures are observed, EEG changes may be minimal or indistinct. Conversely, there is a possibility of pronounced epileptiform activity even in the absence of clinical symptoms.

One of the important aspects of childhood epilepsy is the presence of age-related epileptic syndromes. Some syndromes occur only at a certain age and may subsequently undergo complete or partial remission. At the same time, early-onset and frequently recurring seizures can have a negative impact on the child's cognitive development and lead to long-term consequences [17,22].

Social and clinical significance of epilepsy

In childhood, epilepsy is not only a medical, but also an important social problem. Recurrence of seizures, cognitive and behavioral disorders make it difficult for children to adapt to the educational process, negatively affect their relationships with peers, and increase family stress.

Therefore, early detection, correct classification, and treatment of epilepsy based on an individual approach remain one of the priority tasks of pediatric neurology. Modern approaches should be aimed not only at controlling seizures, but also at ensuring the full development of the child [22].

Final considerations

The results of the literature review show that epilepsy is widespread in childhood and has specific age-related epidemiological and clinical features. The highest incidence of the disease occurs in the first year of life and adolescence. The polymorphic and often atypical course of epileptic seizures in children requires a special approach to diagnosis and treatment. These data once again confirm the need for in-depth study of childhood epilepsy, early diagnosis, and development of effective treatment strategies.

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